REMARKS

Reconsideration and allowance are respectfully requested.

The rejection of claims 51-55 under 35 U.S.C. §112 and the objection to claim 55 are moot because those claims are canceled.

The claims in this case relate to link quality in the context of a network including a plurality of infrastructure nodes. Example link quality parameters recited in dependent claims include Doppler spread, average fading duration, coherence time, variational speed, radio signal quality, bit error, etc., see, e.g., claim 7. Energy conservation and link quality look at network routing from different perspectives. By focusing on link quality, as opposed to using the most energy-efficient link, a more reliable communication link is provided from source to target, thereby reducing the risk of lost packets, the need for packet retransmission, and the burden on the network capacity. A predictive algorithm operates on information relating to time varying properties of the link quality parameter(s) for determining an actual route path.

Kennedy describes a mobile ad hoc network with wireless mobile nodes and wireless communication links connecting the nodes together. Route discovery and maintenance in the network is controlled by transmitting beacon signals from each mobile node, determining a node or group condition at each mobile node, and varying the beacon signals based upon the determined node/group condition. Route tables are built and updated at each mobile node with a first one of proactive and reactive route discovery processes to define routes in the network. The beacon signals are received and node/group condition information is stored at each node. Route stability over time is predicted based upon the node/group condition information, and when predicted route stability reaches a first transition parameter the method switches to a second one of the proactive and reactive route discovery processes.

In summary, Kennedy uses route quality information to change between proactive and reactive route discovery process, which is different than using the route quality information to determine which nodes should constitute the route. Redi uses the route quality information to determine the power level needed for transmitting information between nodes—not for determining the actual route path in a predictive process as in claim 1.

Claim 1 recites "link monitoring circuitry for acquiring link quality information indicating link status between said infrastructure nodes" and "electronic processing circuitry for using said link quality information in a route path determination process in the infrastructure nodes using a predictive procedure." The Examiner admits at the bottom of page 4 that Kennedy does not disclose these two claim elements and turns to Redi. Redi discloses an electronic processor circuit [0017], which is not the same as the claimed link monitoring circuitry. The electronic processing circuitry in Redi determines path loss information, distributes information, and routes messages. Redi uses route quality information to determine the power level needed for transmitting information between nodes but not to determine the actual route path in a predictive process as in claim 1.

Regarding the claimed electronic processing circuitry, Kennedy uses node condition information received from node beacons to predict route stability over time and uses the predicted route stability <u>to change between</u> proactive and reactive route discovery processes. As explained above, this is not believed to be the same as using the node condition information or the predicted route stability in a route determining process to determine which nodes that should constitute the route. Instead, Kennedy uses that information to change between different types of processes.

Similarly, for the claim feature "said predictive procedure uses said time varying information of link status in the predictive procedure," Kennedy uses time varying information to decide when to switch between a proactive and reactive route discovery process, i.e., to find a value of a transition parameter that indicates the time to switch between the two types of processes. In contrast, the time varying information in claim 1 is used to actually determine a route path.

In the Advisory Action, the Examiner explains further how Kennedy is being interpreted with respect to the claimed link quality information (mapped to node condition information), link status (mapped to link failure, link creation, priority, QoS, BER, available bandwidth), and route path determination (mapped to predicting route stability based on node condition information and switching to a proactive or reactive route discovery protocol). Although Applicants disagree that Kennedy teaches the claimed features, to further distinguish from Kennedy and Redi, the independent claims are amended to specify that the claimed predictive procedure uses time varying information of link status to provide multiple calculated anticipation scenarios, with the predictive procedure being configured to analyze the anticipation scenarios to determine a route path. An anticipation scenario includes a near-future link status. Non-limiting, example support for the amendments may be found on page 18, line 6-page 19, line 25 quoted below:

> The route determination method or procedure using a predictive model or procedure that consists of taking the obtained link status information from measurements of radio and/or link quality, monitor the variations of links, and anticipate or extrapolate the near-future status of each link stored in the routing table, thus the routing element 101 may update the routing configuration before links fail. This has the benefit of reducing unnecessary traffic flow due to lost packages.

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Table 1 shows some scenarios and their interpretation considering signal strength together with a fading parameter or variation speed VS parameter.

Table 1: Characteristics of link-status

Average signal strength or L2 quality	High f_D or high VS	Low f_D or Low VS
Low	Steady and random errors	Bursty errors for some duration of time
High	Steady and good condition	Bursty and good condition for some duration of time

From table 1 it is possible to obtain the following examples of anticipation criteria together with below listed assumptions on signal strength trends:

1. In case of low f_D or low VS:

If the signal strength goes from low to high, a new route is going to arise.

If the signal strength goes from high to low, the current route will fade out.

2. In case of high f_D or high VS:

If the signal strength goes from low to high, a new steady route is going to grow slowly.

If the signal strength goes from high to low, the current steady route is going to disappear slowly.

Kennedy does not teach route path determination based on calculated anticipation scenarios where an anticipation scenario includes a near-future link status. Redi also lacks this feature. So even if Kennedy and Redi were combined for purposes of argument only, that

combination lacks a teaching of using the route quality information to determine which nodes should constitute the route.

The claimed route determination uses a predictive model or procedure that uses obtained link status information from measurements of radio and/or link quality and anticipates or extrapolates the near-future status of links stored in the routing table. In this way, the router can route packets according to the determined route path as well as update the routing configuration before links fail thereby reducing unnecessary traffic flow due to lost packets.

The application is in condition for allowance. An early notice to that effect is requested.

Respectfully submitted,

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